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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,873	12/21/2001	Richard L. Knipe	TI-26153	1022
23494	7590	11/06/2003	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			CHOI, WILLIAM C	
			ART UNIT	PAPER NUMBER
			2873	

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/027,873

Applicant(s)

KNIPE, RICHARD L.

Examiner

William C. Choi

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-29 is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-10, 12-15, 17, 30 and 31 is/are rejected.
- 7) ☒ Claim(s) 7, 11, 16 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 04 August 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The drawings were received on 8/4/2003. These drawings are accepted.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 30 and 31 recite the limitation "of said first and second groups " in lines 3 and 2, respectively. The dependency relation of these claims is as follows: claim 31 dependent on claim 30; 30 on 24; 24 on 23 and 23 on 19. Nowhere in the preceding parent claims, is there any indication of first and second groups of members, thereby rendering these claims vague and indefinite and furthermore having insufficient antecedent basis for this limitation in these claims. For purposes of examination, it was assumed these claims were dependent on claim 25, where there is mention of first and second groups.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 8, 9, 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Gale et al (U.S. 5,444,566).

In regards to claim 1, Gale et al discloses a micromechanical device (Figure 1a) comprising: a semiconductor substrate (column 2, line 66, Figure 1a, "34"); at least one member operable to deflect about a torsion axis to either of at least two states (Figures 1a-1c, "26"); a switch associated with each said at least one member for selectively connecting said member to a voltage signal (column 8, lines 35-53, Figure 16, "198" and "199").

Regarding claim 2, Gale et al discloses said device further comprising: a memory cell for storing positioning information, said memory cell having an output driving said switch (column 6, lines 14-34 and column 8, lines 35-55, Figure 16, "186").

Regarding claim 5, Gale et al discloses said device comprising a bias electrode on either side of said torsion axis (column 2, line 68 – column 3, line 1, Figure 1b, "28" and "30").

Regarding claim 8, Gale et al discloses said switch comprising a pass transistor (column 8, lines 35-53, Figure 16, "198" and "199").

Regarding claim 9, Gale et al discloses wherein said member is a micromirror (column 2, lines 53-65, Figure 1a, "26").

In regards to claim 14, Gale et al discloses a micromechanical device comprising: at least one deflectable member supported by a torsion hinge and spaced apart from a substrate (Figure 1a, "26"); at least two bias electrodes supported by said substrate, one on each side of an axis of said torsion hinge (Figure 1b, "28" and "30");

and a means associated with each said at least one deflectable member for selectively connecting said deflectable member to a voltage potential (column 8, lines 35-53, Figure 16, "198" and "199").

Regarding claim 15, Gale et al discloses wherein said means for selectively electrically connecting comprising a pass transistor (column 8, lines 35-53, Figure 16, "198" and "199").

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 5, 6, 8, 9, 14 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Gee et al (U.S. 6,525,864 B1).

In regards to claim 1, Gee et al discloses a micromechanical device (column 2, lines 18-65, Figure 5) comprising: a semiconductor substrate (column 7, lines 61-65, Figure 5, "401"); at least one member operable to deflect about a torsion axis to either of at least two states (column 6, lines 14-18 and column 7, lines 63-65, Figure 5, "402"); a switch associated with each said at least one member for selectively connecting said member to a voltage signal (column 2, lines 52-65, column 10, lines 40-54, Figure 8).

Regarding claims 5 and 6, Gee et al discloses at least two bias electrodes, one on either side of said torsion axis and electrically connected (column 7, line 63 – column 8, line 2, Figures 5 and 6, “406”).

Regarding claim 8, Gee et al discloses said switch comprising a pass transistor (claim 19).

Regarding claim 9, Gee et al discloses wherein the member is a mirror (column 7, line 65, Figure 5, “402”), which would inherently be a micromirror, this being reasonably assumed from Gee et al disclosing said invention providing an integrated circuit and mirror device for use in telecommunications (column 2, lines 18-27).

In regards to claim 14, Gee et al discloses a micromechanical device (column 2, lines 18-65, Figure 5) comprising: at least one deflectable member, each deflectable member supported by a torsion hinge (column 6, lines 14-18 and column 7, lines 63-65, Figure 5, “402”) and spaced apart from a substrate (column 7, lines 61-65, Figure 5, “401”); at least two bias electrodes supported by said substrate, one on each side of an axis of said torsion hinge (column 7, line 63 – column 8, line 2, Figures 5 and 6, “406”); and a means associated with each said at least one deflectable member for selectively connecting said deflectable member to a voltage potential (column 2, lines 52-65, column 10, lines 40-54, Figure 8).

Regarding claim 15, Gee et al discloses said switch comprising a pass transistor (claim 19).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, 10, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gale et al (U.S. 5,444,566) as applied to claim 1 above, and further in view of Gale et al (U.S. 5,285,407).

Regarding claim 3, Gale et al (U.S. 5,444,566) discloses said device comprising a memory cell for storing positioning information (column 6, lines 14-34) but does not specifically disclose said memory cell comprising a capacitor storing a charge representing said positioning information. Gale et al (U.S. 5,444,566) does teach, however, the use of the memory cell of (U.S. 5,285,407) of the same inventorship, in his device (column 6, lines 58-63). Gale et al (U.S. 5,285,407) teaches a memory cell comprising a capacitor (Figure 4, "32", "C1" and "C2"), which inherently will store a charge representing said positioning information. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the memory cell of Gale et al (U.S. 5,444,566) to comprise a capacitor storing a charge representing said positioning information since Gale et al teaches its specific use in his device.

Regarding claim 4, Gale et al (U.S. 5,285,407) further teaches said memory cell comprising a pass transistor (column 6, lines 8-13).

Regarding claim 10, Gale et al (U.S. 5,285,407) further teaches wherein said means comprises: a pass transistor having a gate and two terminals, said gate connected to said memory capacitor, one said terminal connected to said member and a second said terminal connected to a voltage connection (Figure 4).

Regarding claims 12 and 13, Gale et al teaches wherein said memory cell is operable to turn on and off said pass transistor when said memory cell capacitor holds a first charge and second charge respectively (column 3, lines 61-68).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gale et al (U.S. 5,444,566) as applied to claim 14 above, and further in view of Gale et al (U.S. 5,285,407).

Regarding claim 17, Gale et al (U.S. 5,444,566) discloses as set forth above, but does not specifically disclose wherein said means for selectively electrically connecting comprising: a pass transistor; and a capacitor connected to a gate terminal of said pass transistor. Gale et al (U.S. 5,444,566) does teach, however, the use of the memory cell of (U.S. 5,285,407) of the same inventorship, in his device (column 6, lines 58-63). Gale et al (U.S. 5,285,407) teaches wherein said means for selectively electrically connecting comprising: a pass transistor; and a capacitor connected to a gate terminal of said pass transistor (Figure 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for said means of Gale et al (U.S. 5,444,566) to comprise a pass transistor; and a capacitor connected to a gate terminal of said pass transistor since Gale et al teaches its specific use in his device.

Allowable Subject Matter

Claims 19-24 and 25-29 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a combination of all the claimed features as presented in claims 19-24: a method of operating a micromechanical device as claimed, specifically comprising electrically floating a deflectable member such that a reset signal does not reposition the electrically floating deflectable member

The prior art fails to teach a combination of all the claimed features as presented in claims 25-29: a method of operating an array of micromechanical elements as claimed, specifically comprising grounding a deflectable member of a first group of said micromechanical elements; allowing a deflectable member of a second group of said micromechanical elements to electrically float; and applying a reset signal to bias electrodes associated with said micromechanical elements in said first and said second groups.

Claims 7, 11, 16 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a combination of all the claimed features as presented in claim 7: a micromechanical device as claimed, specifically wherein the switch selectively connects the member to a ground signal.

The prior art fails to teach a combination of all the claimed features as presented in claim 11: a micromechanical device as claimed, specifically wherein the voltage connection is a ground connection.

The prior art fails to teach a combination of all the claimed features as presented in claim 16: a micromechanical device as claimed specifically wherein said means for selectively connecting comprises a pass transistor for electrically connecting said deflectable member to a ground potential.

The prior art fails to teach a combination of all the claimed features as presented in claim 18: a micromechanical device as claimed specifically wherein said means for selectively electrically connecting comprises: a second terminal of a capacitor connected to a ground potential.

Claims 30 and 31 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 8/4/2003 have been fully considered but they are not persuasive. Specifically in claims 1 and 14, applicant amended the claims to include the limitations of "at least one" member and either a switch or means "associated with each said at least one deflectable member". These amendments, although allowing for additional members, do not change the scope of the claim. The "at least one" language still allows for there being only one member, which, as originally addressed in the initial

office action, is met by the Gale (U.S. 5,444,566) reference, which has been reiterated above.

Applicant's arguments with respect to claims 1, 5, 8, 9, 14 and 15 have been considered but are moot in view of the new ground(s) of rejection.

Regarding claim 2, examiner has further clarified the how the memory cell drives the switch.

Prior Art Citations

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Huffman (U.S. 6,480,433 B2), Chen et al (U.S. 6,473,361 B1), Huibers (U.S. 6,356,378 B1) and Nakamura (U.S. 5,953,103) are being cited herein to show micromechanical devices comprising some of the limitations of that of the claimed invention. However, additional rejections would have been repetitive.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not


mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Choi whose telephone number is (703) 305-3100. The examiner can normally be reached on Monday-Friday from about 9:00 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (703) 308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

W.C.
William Choi
Patent Examiner
Art Unit 2873
October 21, 2003


Georgia Epps
Supervisory Patent Examiner
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